

CLAIMS

1. A method to provide cross-talk cancellation in a multiple input multiple output system comprising a plurality of outputs (OUT1, OUT2, ..., OUTn), said method comprises a step of executing for a first signal (Si) a cross-talk cancellation, characterized in that said method further comprises
- determining during a first phase and according to a heuristic model, for said first signal (Si) to be transmitted to a first output (OUTi) of said plurality of outputs (OUT1, OUT2, ..., OUTn), at least one dominant interfering tone (D) of at least one second signal (Sj) to be transmitted to a second output (OUTj) of said plurality of outputs (OUT1, OUT2, ..., OUTn), said at least one dominant interfering tone (D) being a tone of said at least one second signal (Sj) that would generate cross-talk upon said first signal (Si) when being transmitted to said first output (OUTi); and
  - executing said step of cross-talk cancellation for said first signal (Si) during a second phase for said at least one determined dominant interfering tone (D) of said second signal (Sj).
2. The method to provide cross-talk cancellation according to claim 1, characterized by executing said step of determining during a first phase and according to a heuristic model said at least one dominant interfering tone (D), for each first signal (Si; i=1...n), and out of all tones of all other second signals (Sj; j=1...n; j≠i) being different of said first signal (Si); and executing said step of cross-talk cancellation for each said first signal (Si; i=1...n) during said second phase for each determined dominant interfering tone (D) of one of said all other second signals (Sj; j=1...n; j≠i).

3. The method to provide cross-talk cancellation according to anyone of claim 1 and claim 2, characterized in that said step of determining during a first phase and according to a heuristic model said at least one dominant interfering tone (D) comprises:

- 5                   - determining a utility value for each predetermined tone of said second signal ( $S_j$ ), said utility value reflecting a utility of canceling said predetermined tone and being defined in function of an increase in transmission rate it would cause to said first signal ( $S_i$ ) in the event when all other interfering signals ( $S_l$ ;  $l \neq j$  and  $l \neq i$ ) on that predetermined tone  
10 would have been cancelled; and
- in the event when said utility value exceeds a utility threshold, defining said predetermined tone as a dominant interfering tone (D).

4. The method to provide cross-talk cancellation according to  
15 anyone of claim 1 to claim 3, characterized in by executing said step of cross-talk cancellation during said second phase upon reception of said first signal ( $S_i$ ) in order to compensate cross-talk being imposed upon said first signal ( $S_i$ ) during transmission of said first signal ( $S_i$ ).

20                   5. The method to provide cross-talk cancellation according to claim 1 to claim 3, characterized in by executing said step of cross-talk cancellation during said second phase, before transmission of said first signal ( $S_i$ ) in order to pre-compensate cross-talk that will be imposed upon said first signal ( $S_i$ ) during transmission of said first signal ( $S_i$ ).

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6. The method according to anyone of claim 1 to claim 5, characterized in by executing said first phase during initialization of said multiple input multiple output system.

30                   7. A module (MOD) to provide cross-talk cancellation in a multiple input multiple output system that comprises a plurality of

outputs (OUT1, OUT2, ..., OUTn), said module comprises an executing means (EXE) coupled to each one of said plurality of outputs (OUT1, OUT2, ..., OUTn) to execute for a first signal (Si) a cross-talk cancellation, characterized in that said module further comprises

- 5                   - determining means (DET) to determine during a first phase and according to a heuristic model, for said first signal (Si) to be transmitted to a first output (OUTi) of said plurality of outputs (OUT1, OUT2, ..., OUTn), at least one dominant interfering tone (D) of at least one second signal (Sj) to be transmitted to a second output (OUTj) of said  
10 plurality of outputs (OUT1, OUT2, ..., OUTn), said at least one dominant interfering tone (D) being a tone of said at least one second signal (Sj) that would generate cross-talk upon said first signal (Si) when being transmitted to said first output (OUTi); and that said executing means is coupled to said determining means (DET) in order to execute said cross-  
15 talk cancellation for said first signal (Si) during a second phase according to said at least one determined dominant interfering tone (D) of said second signal (Sj).

8. The module according to claim 7, characterized in that said  
20 multiple input multiple output system comprises a central office and that said module is comprised in said central office.

9. The module according to claim 7, characterized in that said  
module is comprised in said multiple input multiple output system which  
25 is comprised in a Digital Subscriber Line system.